RECORD OF DECISION AMENDMENT

REMEDIAL ACTION

U.S. AVIEX SUPERFUND SITE

CASS COUNTY, MICHIGAN

September, 2004

Summary of the Record of Decision Amendment
U.S. Aviex Site
Niles, Michigan

Site Name and Location

U.S. Aviex Site
1056 Huntly Road
Niles, Michigan 49120

Statement of Basis and Purpose

This decision document amends the September 7, 1988 Record of Decision (ROD) and subsequent 1993 Explanation of Significant Differences (ESD) for the U.S. Aviex Site (Site) in Niles, Michigan. This document presents the selected change to the remedy to address contaminated groundwater at the Site. This decision document was developed in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (commonly called SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Specifically, this document has been prepared in compliance with CERCLA Section 117 and NCP Section 300.435(c)(2)(ii).

The remedy that was selected in the 1988 ROD and then later modified in the 1993 ESD, was to eliminate the principal threats to human health and the environment posed by the conditions at the Site, by reducing the potential for human exposure to contaminants in the groundwater, and by eliminating the threat to the groundwater through the treatment of on-site soil contamination. Monitoring has indicated that the groundwater extraction and treatment system has successfully treated the plume to near MCL values. The low level of residual contamination makes the pump and treat system extremely inefficient and costly to operate to remove additional residual contamination. In addition, recent MDEQ studies have identified contaminant source areas at the former Aviex facility, at or just below the groundwater/vadose zone interface, which will continue to release low levels of contamination into the plume. These newly discovered source areas cannot be effectively treated by the pump and treat system, but pilot studies have shown that these areas of contamination can be effectively treated by in-situ treatment. For these reasons MDEQ and U.S. EPA have decided to change the 1988 ROD remedy to Monitored Natural Attenuation enhanced by in-situ treatment of the on-site contamination.

The Michigan Department of Environmental Quality (MDEQ) is the lead agency for the Site and the United States Environmental Protection Agency (U.S. EPA) is the support agency. The MDEQ has indicated its intention to concur with this ROD Amendment. MDEQ's Letter of Concurrence will be added to the Administrative Record.

Assessment of the Site

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the ROD Amendment, may present an imminent and substantial endangerment to public health, welfare, or the environment.

Description of Selected Remedy

The selected remedy for the Site will change the treatment method from a groundwater extraction and treatment system to MNA. MNA will also be augmented with on-site in-situ treatment to address the newly identified contamination at or just below the

groundwater/vadose zone interface.

The major components of the selected remedy include:

- MNA of the groundwater plume and in-situ ozone/air sparge treatment on-site for the newly identified contamination at or just below the groundwater/vadose zone interface.
- Shut down of the existing groundwater extraction and treatment system.
- Modification of the groundwater monitoring plan.
- Update of the groundwater clean-up criteria to current Michigan Part 201 Residential Health Based Drinking Water Criteria (Table 1).
- Provision of contingency plan(s) that may include the operation of the existing extraction and treatment system with a new air stripper, and/or the installation of a down gradient extraction and treatment system.

Declaration of Statutory Determinations

In accordance with Section 121 of CERCLA, the amended plan satisfies the following requirements: protection of human health and the environment, compliance with applicable or relevant and appropriate requirements (ARARs), cost effectiveness, uses permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable, and satisfies the preference for treatment as a principal element. This remedial action will monitor the down gradient plume and address concerns of further off-site migration of contaminants. Because this remedy will result in hazardous substances remaining on site above health-based levels, review will continue to be conducted at least every five years from the date that construction started at the Site. The second five year review report is due in December 2005.

Richard C Karl

Richard C. Karl, Director
Superfund Division

9-29-04

Date

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Responsiveness Summary

Administrative Record Index Update #2

Record of Decision Amendment
U.S. Aviex Site
Niles, Michigan

I. Introduction to the Site and Statement of Purpose

The U.S. Aviex Site (Site) includes the former U.S. Aviex (Aviex) facility that covers approximately six acres in Howard Township of Cass County, Michigan, and is located at 1056 Huntly Road just east of the City of Niles (Figure 1 and 2). The Site also includes a groundwater contaminant plume that extends off the former Aviex facility (Figure 3). The St. Joseph River (tributary to Lake Michigan) is about 3.5 miles west of the Site and the nearest surface water body, Barron Lake, is about 0.5 miles north-northeast of the Site.

The Michigan Department of Environmental Quality (MDEQ) is the lead agency for the Site and the United States Environmental Protection Agency (U.S. EPA) is the support agency. MDEQ and U.S. EPA jointly hosted two public meetings on 17 August 2004 to discuss the proposed amendment to the 1988 Record of Decision (ROD) for the Site.

The remedy, which amends the 1988 ROD for the Site, was developed in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (commonly called SARA) and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Specifically, this document has been prepared in compliance with CERCLA Section 117 and NCP Section 300.435(c)(2)(ii).

The remedy that was selected in the 1988 ROD and then later modified in the 1993 ESD was to eliminate the principal threats to human health and the environment posed by the conditions at the Site by reducing the potential for human exposure to contaminants in the groundwater and by eliminating the threat to the groundwater through the treatment of on-site soil contamination. Monitoring has indicated that the groundwater extraction and treatment system has successfully treated the plume to near MCL values. The low level of residual contamination makes the pump and treat system extremely inefficient and costly to operate to remove additional residual contamination. In addition, recent MDEQ studies have identified contaminant source areas at the former Aviex facility which continue to release low levels of contamination into the plume. These newly discovered source areas cannot be effectively treated by the pump and treat system. Pilot studies have shown that one of these areas of contamination can be effectively treated by in-situ ozone/air sparge treatment, and the other by the injection of a MNA enhancing chemical. An additional consideration is that the air stripper tower that was installed by the Aviex Company in 1983, and reused for the system installed by the U.S. EPA in 1993, has exceeded its useful operating life.

Based upon this information, the MDEQ and U.S. EPA agree that it would be more effective to address the remaining residual plume contaminant and the newly discovered source areas, by using MNA processes to address the more dilute portions of the groundwater plume, and on-site in-situ treatment to address the on-site source area contamination.

In accordance with NCP Section 300.825(a)(2), the ROD Amendment will become part of the Administrative Record file for this Site and will also be included in the public repository. The locations of the files are listed below:

The MDEQ Administrative Record file is located at:

MDEQ, Remediation and Redevelopment Division (RRD)
Superfund Section, Lansing District Office
Constitution Hall, 3rd Floor South
Lansing, MI, 48909
8:00 a.m. to 5:00 p.m. Monday through Friday

The public repository is located at:

Niles District Library
620 East Main Street
Niles, MI 49120
9 a.m. to 8 p.m. Monday through Thursday
9 a.m. to 5 p.m. Friday and Saturday

The U.S. EPA Administrative Record is located at:

U. S. EPA Region 5
77 W. Jackson Boulevard
Chicago IL, 60604
7th Floor

II. Site History, Contamination and Selected Remedy

The Aviex Company produced various non-lubricating automobile fluids from the early 1960s until 1978. Bulk chemicals were stored in aboveground storage tanks (ASTs), underground storage tanks (USTs), steel drums, or fiberpak drums. All tanks were connected to batch and filling rooms by underground and/or overhead pipes. During facility operation, three different events were reported to have contributed to contamination at the Site:

- 1960's and 1970's – Diethyl ether, aromatic and halogenated hydrocarbons were released into the vadose zone of the soils in the area of the plant operations. These soils still contain quantities of benzene, 1,2-dichloroethane (1,2-DCA), 1,1-dichloroethene (1,1-DCE), diethyl ether (DEE), dichlorofloromethane (DCFM) 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), trichlorofluoromethane (TCFM), trans-1,2-dichloroethane (trans-1,2-DCA) and perchloroethene (PCE).

- July 1972 - An underground pipeline containing DEE was ruptured during an excavation on the Site. DEE was later detected in nearby residential wells.

- November 1978 - A fire destroyed most of the facility. Thousands of gallons of water were used to extinguish the fire over a two-day period. Barrels and indoor tanks of stored chemicals ruptured during the fire and their contents were consumed by the fire or washed onto unpaved areas. A number of organic compounds were released into the soil and eventually into the groundwater. Nearby residential wells were later determined to be contaminated with: benzene, chloroform, dichloromethane, ethylbenzene, toluene, xylenes, 1,1-DCE, 1,2-DCA, DCFM, TCE, PCE, DEE, 1,1,1-TCA and TCFM.

In 1980, concentrations of contaminants detected in on-site monitoring wells installed by the MDNR included: 1,1,1-TCA, 29 milligrams per liter (mg/L); toluene, 1.1 mg/L; xylene, 0.720 mg/L; DEE, 120 mg/L; acetone, 250 mg/L, and isopropanol, 92 mg/L.

In 1982, the State of Michigan initiated legal action against the Aviex Company resulting in a groundwater investigation at the Site. Based on this investigation, an on-site groundwater extraction and treatment system was installed by the Aviex Company. In November 1983,

the Aviex Company performed an aquifer pump test and began groundwater extraction from two wells at 100 gallons per minute each. This contaminated groundwater was treated in an air stripper. The effluent from the stripper was discharged to the Bame-Huntly surface drain.

In 1984, the U.S. EPA became involved after the Site was listed on the Federal National Priorities List (NPL). In 1985, a Consent Order was reached between the U.S. EPA and the Aviex Company that required the company to conduct a remedial investigation/feasibility study (RI/FS). The RI/FS was completed in August 1986. By August 1988, the Aviex Company filed for Chapter 11 Bankruptcy. Funds had been set aside by the Aviex Company to complete the RI/FS, so the bankruptcy action did not stop the ongoing RI/FS. Later, due to the insolvency of the Aviex Company, the U.S. EPA completed the FS and assumed the responsibility for remediation activities at the Site.

In September 1987, the Michigan Department of Natural Resources (MDNR) (predecessor to the present day MDEQ), used state funding to construct an alternate water (municipal) supply system for Howard Township. The system distributes water from the Niles public water supply to an estimated 220 homes in the area.

The RI/FS conducted by the U.S. EPA included soil and groundwater investigations. On-site subsurface soils were sampled to a depth of 20 feet below ground surface near the entrance driveway, process buildings, and the four-bay truck docks. These soils contained various chlorinated hydrocarbons including: PCE, TCE, 1,1,1-TCA, 1,2-DCA, 1,1-DCE, TCFM, in addition to toluene and ethylbenzene. Volatile organic compounds (VOCs) detected in these soils ranged from 1.01 milligram per kilogram (mg/kg) to 13.0 mg/kg and involved an estimated 11,500 cubic yards of contaminated soils. Approximately 1,500 cubic yards of contaminated soil were also identified beneath the truck dock near the west warehouse. Concentrations of VOCs in these soils ranged from 0.01 mg/kg to 13.0 mg/kg.

Results of the initial 1986 RI indicated that two (and potentially three) areas above the water table contained contaminated subsurface soil that served as sources of groundwater contamination. The pre-design studies conducted after the 1988 ROD included a soil gas investigation to delineate the boundaries of known soil contamination. The collection of 82 soil samples indicated that biodegradation of the organic solvents and/or natural flushing of the soils through infiltration of precipitation (since the last RI sampling event) had significantly reduced contaminant levels in unsaturated soil on the Aviex facility.

VOC contaminated groundwater was determined to extend to the intersection of Janellen and Carberry Roads. The RI/FS report also stated that the USTs at the facility were removed prior to 1980, although two tanks were later discovered and removed in 1992.

1988 ROD Remedial Action

In September 1988, a ROD was signed by the U.S. EPA for a groundwater extraction and treatment system along with soil flushing of the source areas. The State of Michigan concurred with the selected remedy in the ROD. The selected remedy in the ROD was to be protective of human health and the environment, attain federal and state requirements that were applicable or relevant and appropriate to this remedial action as well as being cost-effective. The remedy satisfied the statutory preference for remedies that employ treatment methods that reduce toxicity, mobility or volume as a principal element and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. The remedy selected included:

- A multi-well extraction system.
- Groundwater treatment by an air stripper to remove volatile and halogenated organic

compounds from on-site and off-site contaminated groundwater that exceeded 10E-6 carcinogenic risk; had a hazard index above one; ARARs to the existing drinking water standards; or the U.S. EPA/ MDEQ water quality criteria values for human health.
- Discharge of treated groundwater to surface waters under a National Pollutant Discharge Elimination System (NPDES) permit.
- Monitoring of the groundwater extraction and treatment system influent, effluent, discharge and monitoring wells according to a schedule included in the remedial assessment (RA) report.
- Treatment of source soils by flushing with water, and collection and treatment of these contaminated waters in the air stripper system.

Based upon the sampling results of the pre-design studies conducted after the 1988 ROD, the U.S. EPA determined that the risk associated with the (identified) remaining source soils did not represent a current or future threat to the groundwater beneath the facility of sufficient significance to support the requirement of the installation and operation of the planned soil flushing system. Therefore, the soil flushing system was not installed, and the 1993 Explanation of Significant Differences (ESD) modified the 1988 ROD to remove the soil flushing component.

In 1993, it was confirmed that the groundwater contamination extended beyond the installed extraction and treatment system. However, due to the limited number of wells installed as part of the RI, it is possible, though not confirmed, that the extent of contaminated groundwater was beyond the influence of the installed groundwater extraction and treatment system prior to startup. An additional extraction well (EW-6) was installed in 2000 to prevent further down gradient migration of contaminated groundwater until the extent of contaminated groundwater could be fully defined. In 2002, the MDEQ completed the investigation of the contaminated groundwater that had migrated past the capture zone of the extraction and treatment system. The current extent of contaminated groundwater is depicted on Figure 3. The large DEE plume delineation is based on a DEE contaminant level of 10 ppb, and not the health based value of 3,700 ppb. DEE residual contamination is well below 3,700 ppb. MDEQ has indicated that it will address the DEE contamination under MDEQ Part 201 considerations. Only 1,2 DCA is present beyond the former Aviex facility at concentrations slightly above its MCL value of 5 ppb.

III. Basis for ROD Amendment

Treatment

The remedy that was selected in the 1988 ROD, and then later modified in the 1993 ESD, was intended to eliminate the principal threats to human health and the environment posed by the conditions at the Site by reducing the potential for human exposure to contaminants in the groundwater and by eliminating the threat to the groundwater through the treatment of on-site soil contamination. In implementing the remedy, the remedial actions needed to: (1) comply with existing drinking water standards or U.S. EPA water quality criteria values for human health; (2) reduce the potential for human exposure to contaminants in the groundwater; (3) eliminate the threat to the groundwater through treatment of on-site soil contamination; and, (4) minimize the potential for people or animals to come into direct contact with contaminants.

EPA studied data taken from the monitoring events between September 1997 and September 2002 inclusive. At that time many of the monitoring wells located in the extraction capture zone contained 1,2 DCA just above the MCL. Other contaminants of concern were present but at concentrations below clean up values. The study also indicated that the 1,2 DCA

(above MCL) was located primarily north of the pump and treat capture zone. Recent MDEQ studies have identified contaminated areas at the former Aviex facility which will continue to release low levels of contamination into the plume, and may explain the continued presence of 1,2 DCA downgradient and north of the pump and treat capture zone. These newly discovered source areas cannot be effectively treated by the pump and treat system. Pilot studies have shown that these areas of contamination can be effectively treated by in-situ treatments. A MNA enhancing chemical was injected into a perched water table just north of the warehouse. Significant contaminant destruction was noted in the wells following treatment. An ozone/air sparge system was designed, installed and is operating to oxidize contaminants found in the shallow aquifer east of the stripper. The contaminants are near the groundwater/vadose zone interface.

In addition, the air stripper tower that was installed by the Aviex Company in 1983 and then subsequently reused for the 1993 U.S. EPA system has exceeded its useful life The cost of maintaining the system has significantly increased over the last five years. Some repair parts are no longer available. Without extensive and costly repairs to the system, its effectiveness is limited. Current stripping systems are more economical to purchase and operate than air stripping columns, and were evaluated as options to MNA. However, even with a new state of the art system it still would not be economical to remove residual contamination from the bulk of the plume.

For these reasons MDEQ and U.S. EPA have decided to change the 1988 ROD remedy to Monitored Natural Attenuation enhanced by in-situ treatment of the on-site contamination.

Groundwater Clean up Values

Another consideration of the ROD Amendment was to update the clean-up standards to reflect current drinking water values. Groundwater contaminants with concentrations above health based risk levels, or that exceeded water quality standards, were assigned clean-up standards in the 1988 ROD. At the time of the ROD, drinking water standards promulgated under the Safe Drinking Water Act 40 CFR 141, for DEE, DCFM and TCFM were not available. The State of Michigan surface water quality program proposed a surface water discharge standard of 43 ug/L for DEE, 3,000 ug/L for DCFM and 32,000 ug/L for TCFM, under the NPDES permit process.

After the ROD was signed, the proposed rule criteria of 43 ug/L for DEE, 32,000 ug/L for TCFM and 3,000 ug/L for DCFM were not promulgated by the State of Michigan. In 1990, the State of Michigan promulgated Administrative Rules pursuant to Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Part 201), which regulates and establishes the criteria for the cleanup of sites with contamination. Therefore, this ROD Amendment updates the health based cleanup standards for these and other contaminants to current maximum contaminant levels (MCLs) or residential health-based criteria under MDEQ Part 201 (Table 1).

IV. Description of Significant Differences or New Alternatives

The objectives of the remedy selected in the September 1988 ROD included:

- On-site control of the source of contamination by minimizing leachate production into groundwater beneath the former Aviex facility.
- Off-site management of plume migration. Extraction and treatment of groundwater to meet federal or state drinking water quality standards and criteria to reduce the potential for human exposure to contaminants and reduce the impact on groundwater

resources by minimizing migration of off-site contaminants.

Specifically, the 1988 ROD selected remedy included the following components:

- A multi-well extraction system.
- Groundwater treatment by an air stripper to remove volatile and halogenated organic compounds in on-site and off-site contaminated groundwater that exceed 10E-6 carcinogenic risk; hazard index above one; ARARs to the existing drinking water standards; or the U.S. EPA / MDEQ water quality criteria values for human health.
- Discharge of treated groundwater to surface waters under a NPDES permit.
- Monitoring of the groundwater extraction and treatment system influent, effluent, discharge and monitoring wells.
- Treatment of soils by flushing with water and removal of contaminated effluent by on-site extraction wells.

The final component of the ROD selected remedy, treatment of soils by flushing with water and removal of contaminated effluent by on-site extraction wells, was removed . The 1993 ESD demonstrated that the risk associated with the identified source areas did not represent a current or future threat to the groundwater beneath the facility of sufficient significance to support the requirement of the installation and operation of the planned soil flushing system.

In 2003, MDEQ and U.S. EPA evaluated two options for treating the down gradient plume and the source area contamination recently found at the Site; the use of the pump and treat, on or off-site; and MNA of the plume with on-site source area enhancements.

Existing System with Modifications

This alternative included the use of the existing system with modifications and/or installation of a replacement pump and treat system on or off-site. The evaluation of this option included consideration for the necessary repairs, system modifications, the known extent of contaminated groundwater, and costs for the various options to pump and treat. The current system is outdated and would require extensive repairs, including the possibility of replacing the air stripper tower. The known extent of groundwater contamination exceeds the existing groundwater extraction and treatment system capture area. New down gradient extraction wells and possibly the installation of an additional air stripper treatment system may be required. The estimated cost for continuing to operate the existing groundwater extraction and treatment system for an additional 10 year period ranged from $2,000,000 to greater than $3,500,000, depending on how the system is upgraded and repaired.

Monitored Natural Attenuation with On-Site Source Area Treatment

This alternative considered MNA with on-site enhancements to treat newly identified contamination. Since the off-site plume is approaching the MCL concentration level for 1,2 DCA, (based on current drinking water standards 1,2 DCA is the only compound that exceeds it's MCL in the down gradient plume) dilution and dispersion will effectively reduce 1,2 DCA contamination to below MCLs as the plume flows to the northwest. In addition there is some evidence that reductive dechlorination and hydrolysis are also reducing the chlorinated compounds (very low levels of vinyl chloride and chloroethane have been sporadically detected during monitoring events).

The on-site contamination is much higher than in the down gradient plume contamination. This contamination is located near or just below the water table- vadose zone interface. Two pilot studies were conducted to determine the effectiveness of in-situ treatment for source area contaminant reduction. One study injected a biodegradation mixture into the known

area of contamination north of the warehouse. Subsequent sampling of select wells indicated a reduction in COCs. A second injection was made that covered the entire area. In addition a lab scale test indicated that ozone/air treatment would reduce the contamination east of the pump and treat system. An ozone/air sparge treatment system was installed to further evaluate this option. Based on recent monitoring well information, the pilot test has demonstrated that the treatment is decreasing contaminant concentrations. The proposed remedy is estimated to cost between $650,000 to $1,000,000, compared to the $2,000,000 to greater than $3,500,000, for the pump and treat option over the same 10 year period. About $360,000 has already been expended for the cost of the design, pilot testing and installation of the on-site ozone/air sparge system. This expanded ozone/air sparge system will become part of the ROD Amendment. No additional "MNA enhancing" chemical injection is planned.

V. Evaluation of Alternatives

The amended plan addresses threats to the public health, safety, welfare and the environment posed by the Site. This section compares the performance of the amended plan and the original plan selected in the 1988 ROD. The U.S. EPA and MDEQ used the following nine criteria to evaluate the original and amended plans. The evaluation compares the alternatives using these criteria.

- **Overall protection of human health and the environment** determines whether a plan eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment. The original plan is considered protective of human health and the environment. The amended plan is considered protective of human health and the environment. Under the amended plan, the monitoring well network would detect any further migration of contamination outside of the newly established plume boundaries. If the contaminated groundwater is not contained and continues to migrate, then a contingency plan will be implemented to effectively and efficiently control the contamination.

- **Compliance with ARARs** evaluates whether the plan meets federal and state environmental statutes, regulations, and other requirements that pertain to the Site or whether a waiver is justified. The original plan complied with all established ARARs. The amended plan will comply with all health-based ARARs. The clean-up standards have been updated to comply with health-based standards pursuant to Part 201 of the NREPA. Any air emissions from the ozone/air sparge treatment will be subject to air quality regulations (Part 55 Air Pollution Control, of the NREPA).

- **Long-Term Effectiveness and Permanence** considers the ability of a plan to maintain protection of human health and the environment over time and the reliability of such protection. The original plan offered long-term effectiveness by decreasing the magnitude of residual risk. The amended plan also offers long-term effectiveness. With the groundwater monitoring well network in place, any migration of contamination outside of the contaminant plume boundaries will be detected and the in-situ oxidation of VOCs will reduce the migration of contaminated groundwater off of the former Aviex facility. If the plume is not contained, then a contingency plan will be implemented to effectively and efficiently control the contamination. Historically, contamination has been effectively reduced by the groundwater extraction and treatment system, and the contaminants are approaching clean-up criteria. The in-situ oxidization should reduce residual contamination more effectively than the current extraction and treatment system.

- **Reduction of Contaminant Toxicity, Mobility, or Volume through Treatment** evaluates a plan's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present. Both the amended plan and the original plan reduce toxicity, mobility, or volume of contaminants. The original plan has reduced the volume of the contaminants. Likewise, the amended plan will continue to treat the residual contamination at the facility in a more effective manner. Contingency plans will be implemented if monitoring indicates that the plume contaminants are not being contained.

- **Short-Term Effectiveness** considers the length of time needed to implement a plan and the risks the plan poses to workers, residents, and the environment during implementation. Short-term effectiveness will be achieved by both plans. As the amended plan is currently being evaluated as an expanded pilot study to evaluate the effectiveness of the proposed remedies, the amended plan would be immediately implemented. It is anticipated that the on-site enhancements component of the amended remedy will successfully decrease the contaminant levels on-site below applicable health based criteria within a 2-year time period. It is anticipated that the MNA component of the amended remedy will successfully decrease the contaminant levels in the off-site plume below applicable health based criteria within a 20-year time period.

- **Implementability** considers the technical and administrative feasibility of implementing the plan, such as relative availability of goods and services. Construction of the monitoring well network is complete for monitoring the natural attenuation of the off-site contaminants and the currently installed pilot system would serve as the final on-site ozone/air sparge treatment. Therefore, the amended plan is technically feasible and can be implemented immediately.

- **Cost** includes estimated capital and operation and maintenance (O&M) costs, as well as present worth costs. Present worth cost is the total costs of a plan over time in terms of today's dollars. The estimated cost for continuing to operate the existing groundwater extraction and treatment system for an additional 10 year period ranged from $2,000,000 to greater than $3,500,000, depending on how the system is upgraded and repaired. This cost is primarily equipment operation activities that are currently around $200,000 a year. Additional measures may need to be undertaken to address the down gradient extent of the groundwater contaminant plume. The proposed remedy is estimated to cost between $650,000 to $1,000,000 over the same 10 year period, of which an estimated $360,000 has already been expended (the cost of the design, pilot testing and installation of the on-site ozone/air sparge system). In addition, operation of the sparge system is only anticipated to be necessary for a maximum of 2-years. Monitoring will probably be required for 10 years.

- **State Acceptance** considers whether the State agrees with the U.S. EPA's analyses and recommendation for a change in the 1988 ROD and the 1993 ESD. The State of Michigan concurs with the proposed amended plan.

- **Community Acceptance** considers whether the local community agrees with the EPA's analyses and preferred alternative and will be evaluated and based upon the public's comment period. No public comments were received during the public comment period.

VI. Selected Remedy

The selected remedy for the groundwater contamination at the Site will be MNA with on-site

enhancement, based upon information obtained during the evaluation of the two alternatives. U.S. EPA and the MDEQ believe that this selected remedy will achieve the objective in a reasonable time frame.

MNA will be used to restore the aquifer and ensure that the contamination plume does not reach the well-head protection area for the City of Niles (Figure 2). Current estimates indicate that cleanup levels will be attained throughout the contaminated portion of the aquifer within 20 years. The groundwater extraction and treatment system has been running for approximately 15 years and is no longer an effective clean-up technology for the low levels of contamination in off-site and on-site source areas.

In addition to MNA, source area contamination has been/will be addressed with on-site enhancements. These enhancements will reduce off-site migration of contaminants from the former Aviex facility.

Actual performance of the MNA remedy will be carefully monitored on and off-site. The remedy decision will be reconsidered by the MDEQ and the U.S. EPA if the groundwater monitoring data indicates that contaminant levels do not continue to decline. One or more of the following observations could lead to a re-consideration of the remedy, if confirmed by four or more rounds of sampling:

- Increase in concentrations of health based contaminants from other unknown (at this time) sources.

- Contaminant plume increases significantly in areal or vertical extent.

The MDNR (1987) funded an alternate water (municipal) supply system for Howard Township. The system distributes water from the Niles public water supply to an estimated 220 homes in the area. The Michigan Department of Community Health (MDCH) continues to monitor remaining residential wells in the plume pathway.

Based upon this information, the MDEQ and U.S. EPA agreed that it would be more effective to address the remaining plume contamination by relying on MNA processes to address the very low level contaminated plume downgradient of the facility, and the use of enhancements on-site to address source area contamination near or just below the water table.

Other components of the selected remedy include:

- Shut down of the existing groundwater extraction and treatment system.
- Modification of the groundwater monitoring plan.
- Update of the groundwater clean-up criteria to current Michigan Part 201 Heath Based Drinking Water Criteria (Table 1).
- Provision of contingency plan(s) that may include the operation of the existing extraction and treatment system with a new air stripper, and/or the installation of a down gradient extraction and treatment system.

Shut Down the Groundwater Extraction and Treatment System

The current groundwater extraction and treatment system will be shut down. Extraction wells will remain intact for future use if needed.

Modify Groundwater Monitoring

The current Groundwater Monitoring Plan will be modified for MNA of the plume area. Numerous monitoring wells in the neighborhood surrounding the Site and monitoring wells

on-site will be sealed and abandoned using MDEQ procedures. These monitoring wells are no longer necessary to monitor natural attenuation or the on-site enhancements.

Update the Drinking Water Criteria to Part 201 Health Based Criteria
MDEQ Part 201 Residential Health Based Groundwater Criteria reflect concentrations in drinking water which are safe for long-term, daily consumption. The criteria are calculated using currently available chemical specific data and U.S. EPA risk assessment guidance. Where a State Drinking Water Standard (SDWS) has been established pursuant to Act No. 399 of the Public Acts of 1976, the SDWS becomes the health-based DWC, as indicated in Section 20120a(5) of Part 201 of the NREPA. However, Michigan's current environmental statute, NREPA, lists the aesthetic cleanup values for DEE at 10 ug/L and the health based criteria value as 3,700 ug/L. Part 201, Rule 299.5709, referenced in Section 20120a (5), requires that remediation of an aquifer address adverse aesthetic impacts (e.g., odor, taste, color, or precipitate) resulting from one or a combination of hazardous substances. The U.S. EPA has determined that the cleanup criteria for DEE will default to the health-based risk standard; however, in compliance with Part 201 rules, the MDEQ has indicated that it will further evaluate any remaining DEE contamination above the clean up standard of 10 ug/L and below the health based criteria value of 3,700 ug/L, under the state cleanup program. Therefore, this ROD Amendment updates the cleanup standards on these and other contaminants to current MCLs or residential health-based criteria under Part 201 (Table 1).

Provide Contingency Plan
The contingency plan may include the operation of the existing extraction and treatment system with a new air stripper and/or the installation of a down gradient extraction and treatment system. The contingency plan will be put into place if the enhancements on-site do not reduce off-site migration and if MNA shows that the plume has changed or is still expanding.

VII. Support Agency Comments

The U.S. EPA has determined that the selected remedy, with the changes described above, will be protective of human health and the environment, will comply with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and will be cost-effective. Upon review of the suggested changes and the information submitted to support such changes, U.S. EPA has changed the Cleanup Standards set out in the ROD in the manner described above.

MDEQ has addressed public comment as shown in the attached Responsiveness Summary and has indicated its intention to concur with this ROD Amendment. Upon receipt of the ROD Amendment, MDEQ's Letter of Concurrence will be added to the Administrative Record.

VIII. Statutory Determinations

In accordance with Section 121 of CERCLA, the amended plan satisfies the following requirements:

- Protection of human health and the environment;
- Compliance with ARARs;
- Cost effectiveness;
- Uses permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable;

- Satisfies the preference for treatment as a principal element or provide an explanation as to why this preference is not satisfied.

- **Protection of Human Health and the Environment**
  Determination of whether a plan eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment. The amended plan is considered protective of human health and the environment. Under the amended plan, the monitoring well network would detect any further migration of contamination outside of the newly established plume boundaries. If the contaminated groundwater is not contained and continues to migrate, then a contingency system shall be implemented to effectively and efficiently control the contamination.

- **Compliance with ARAR's**
  ARAR compliance evaluates whether the plan meets federal and state environmental statutes, regulations, and other requirements that pertain to the Site or whether a waiver is justified. The original plan complied with all ARARs that were established. The amended plan will comply with all health-based ARARs. The clean-up standards have been updated to comply with health-based standards pursuant to Part 201 of the NREPA. Any air emissions from the ozone/air sparge treatment will be subject to air quality regulations (Part 55 Air Pollution Control, of the NREPA).

  The following ARAR's are applicable to the ROD Amendment activities:

  Federal ARAR's
  Clean Air Act Section 101 – Implementation of regional air pollution control program.

  40 CFR 52 – Rules for implementation of regional air quality plan.
  40 CFR 50 – Air quality standards.
  Air quality standards are related to the ozone/air enhancement on the former Aviex Site. Air emissions will be regulated under the Clean Air Act.
  Clean Water Act Section 208 – Actions consistent with water quality management. Water quality is being monitored for natural attenuation. Enhancements on the former Aviex facility will degrade contaminants in the source area and prevent further migration of the contaminants off-site. This enhancement will aid in the natural attenuation of contaminants that have migrated off-site. Monitoring at the extent of the plume will illustrate that the plume has not migrated further.

  Executive Order 12372 40 CFR 29 – Requires state and local coordination and review of EPA-assisted projects.

  State ARAR's
  Act 451 – Part 201 (Environmental Response) of Michigan's Natural Resources and Environmental Protection Act is applicable and establishes criteria based on Site-specific assessment.
  Act 348 – Regulates air emissions and requires the monitoring of air.
  Act 315 – Regulates permitting, construction and abandonment of wells.
  Act 368 – Authority to safeguard public health and determine imminent danger.

  Because this remedy will result in hazardous substances remaining on-site above the health-based levels, reviews will continue to be conducted at least every 5 years from the date construction was started at the Site. The second 5-year review report is due in December 2004.

- **Cost Effectiveness**
  This includes estimated capital and O&M costs, as well as present worth costs. The proposed remedy is estimated to cost between $650,000 to $1,000,000 over a 10-year period, of which an estimated $360,000 has already been expended (the cost of the design, pilot testing and installation of the on-site ozone/air sparge system). The estimated cost for continuing to operate the existing groundwater extraction and treatment system for an additional 10 year period ranges from a minimum of $2,000,000 to greater than $3,500,000.

- **Utilization of Permanent Solutions and Alternative Treatment Technologies for Resource Recovery Technologies to the Maximum Extent Practicable**
  The remedy satisfies the above requirement through the MNA and on-site enhancements. This remedy will monitor the plume that is now approximately one mile from the Site and will reduce off-site migration of the contamination by the use of on-site enhancements to treat the source area contamination.

- **Satisfies the Preference for Treatment as a Principal Element or Provide an Explanation as to why this Preference is not Satisfied**
  This remedy meets the preference for treatment as the principal element. The 1988 ROD provided for an extraction and treatment system to remove contamination by the extraction and treatment of the contaminated groundwater. The contaminant concentrations off-site have become too low for the extraction and treatment system to be effective; therefore, MNA is justified to address the plume. Also, treatment enhancements have been added on-site to address on-site source area contamination and reduce further off-site migration. If it is determined that the plume has expanded or the on-site enhancements are not sufficient, the contingency plan will be implemented. The contingency plan includes the use and expansion/update of the existing groundwater extraction and treatment system.

IX. Public Participation Compliance

Compliance with the public participation requirements of Section 117 of CERCLA, and the NCP Section 300.435(c)(2)(ii), has been achieved through the completion of the following activities as part of this ROD Amendment:

- MDEQ placed formal notifications in the South Bend Tribune and the Niles Daily Star. The notifications were run for two days, 10 August 2004 and 14 August 2004, announcing a public meeting to address the proposed plan;

- MDEQ released the proposed plan for public review and comment 11 August 2004;

- MDEQ provided a 30-day public comment period, which ended 9 September 2004;

- MDEQ distributed copies of the proposed plan to area residents and local officials;

- MDEQ held two public meetings (3:00 p.m. and 7:00 p.m.) on 17 August 2004 at the Howard Township Community Hall in Niles, Michigan;

- MDEQ made a transcript of the public meeting that is available to the public in both the MDEQ and U. S. EPA Administrative Records and Site

repository; and,

- MDEQ received no public written or verbal comments on the proposed plan during the public comment period.

FIGURES

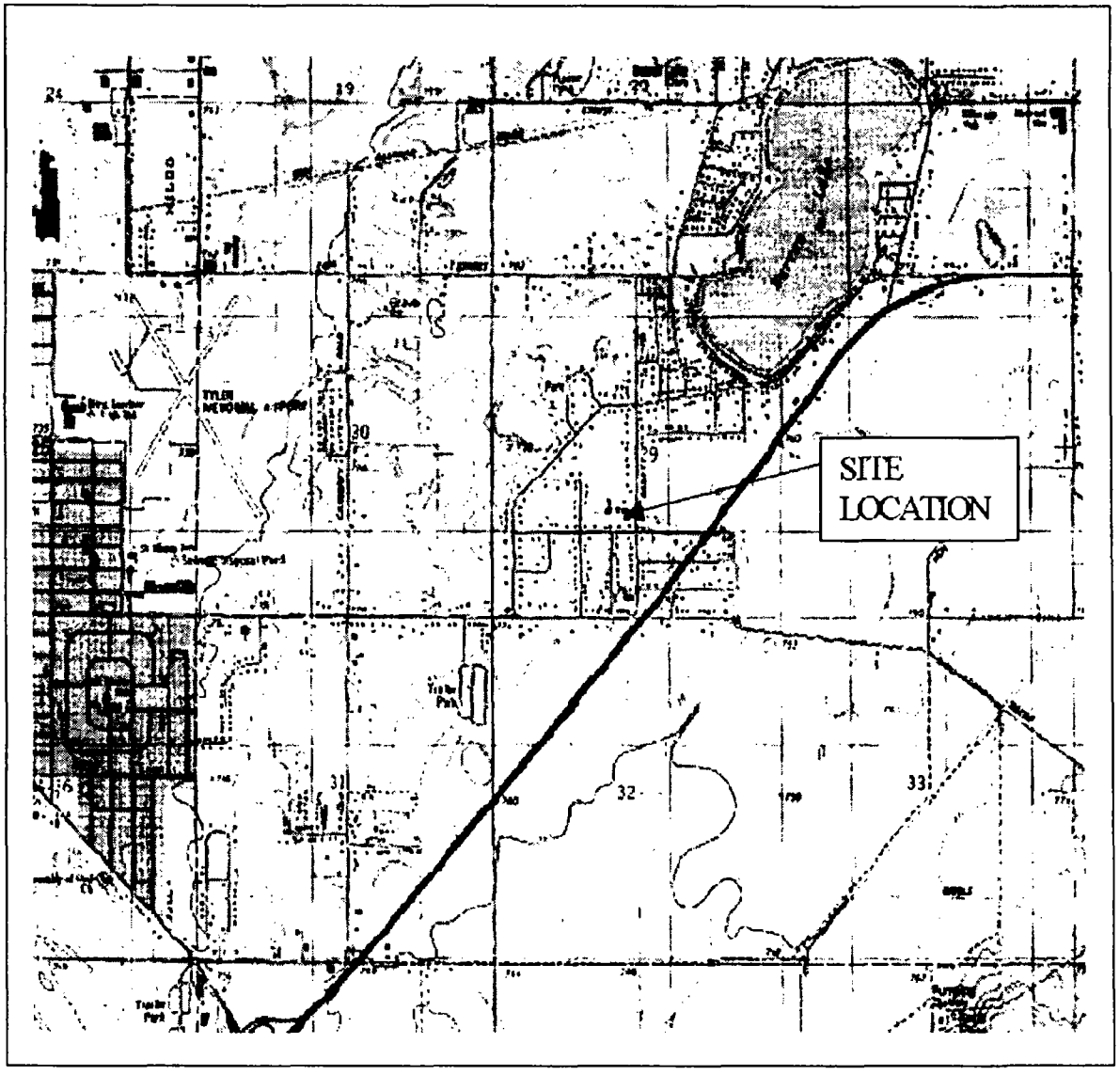

Figure 1: Site Location Map

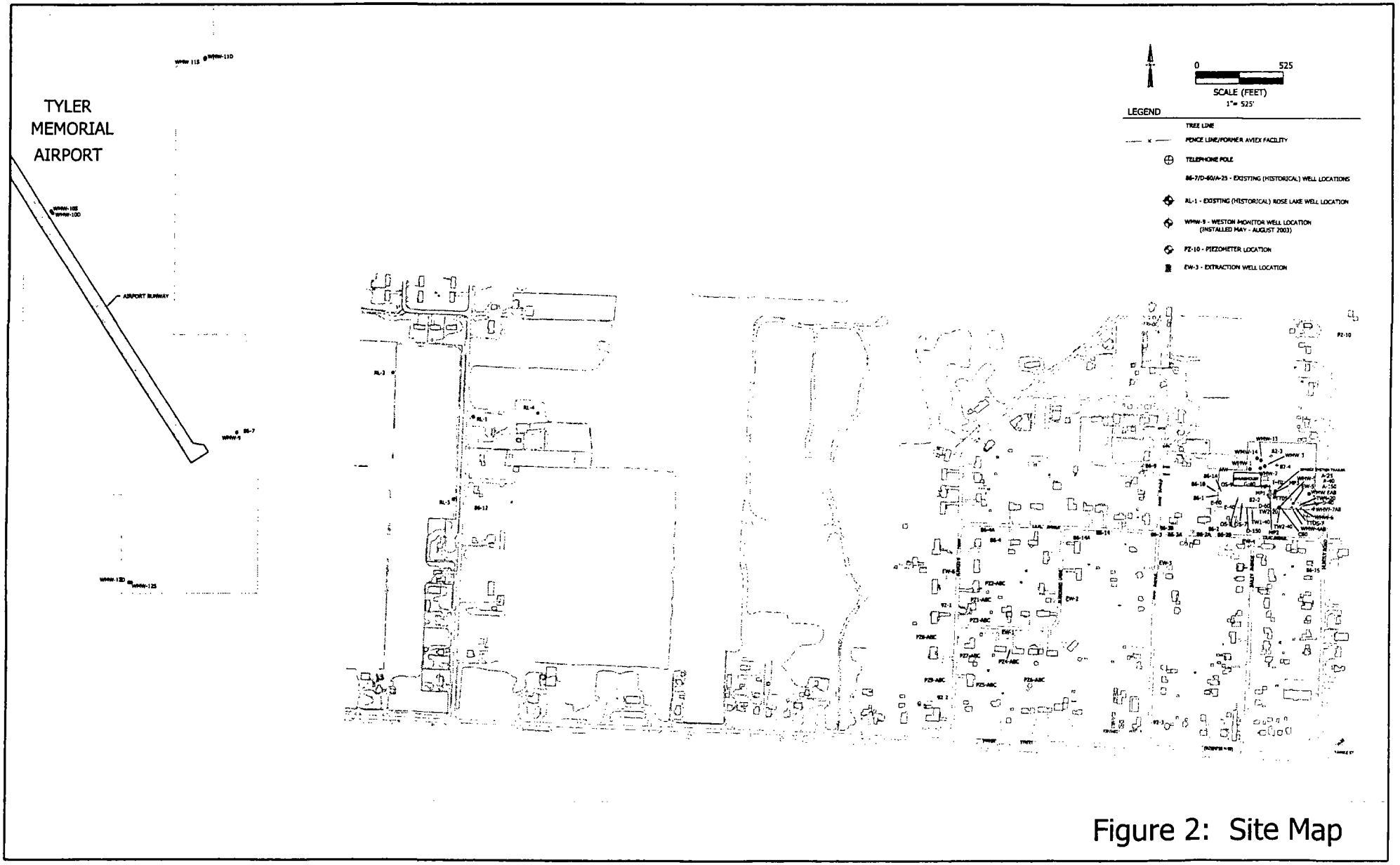

Figure 2: Site Map

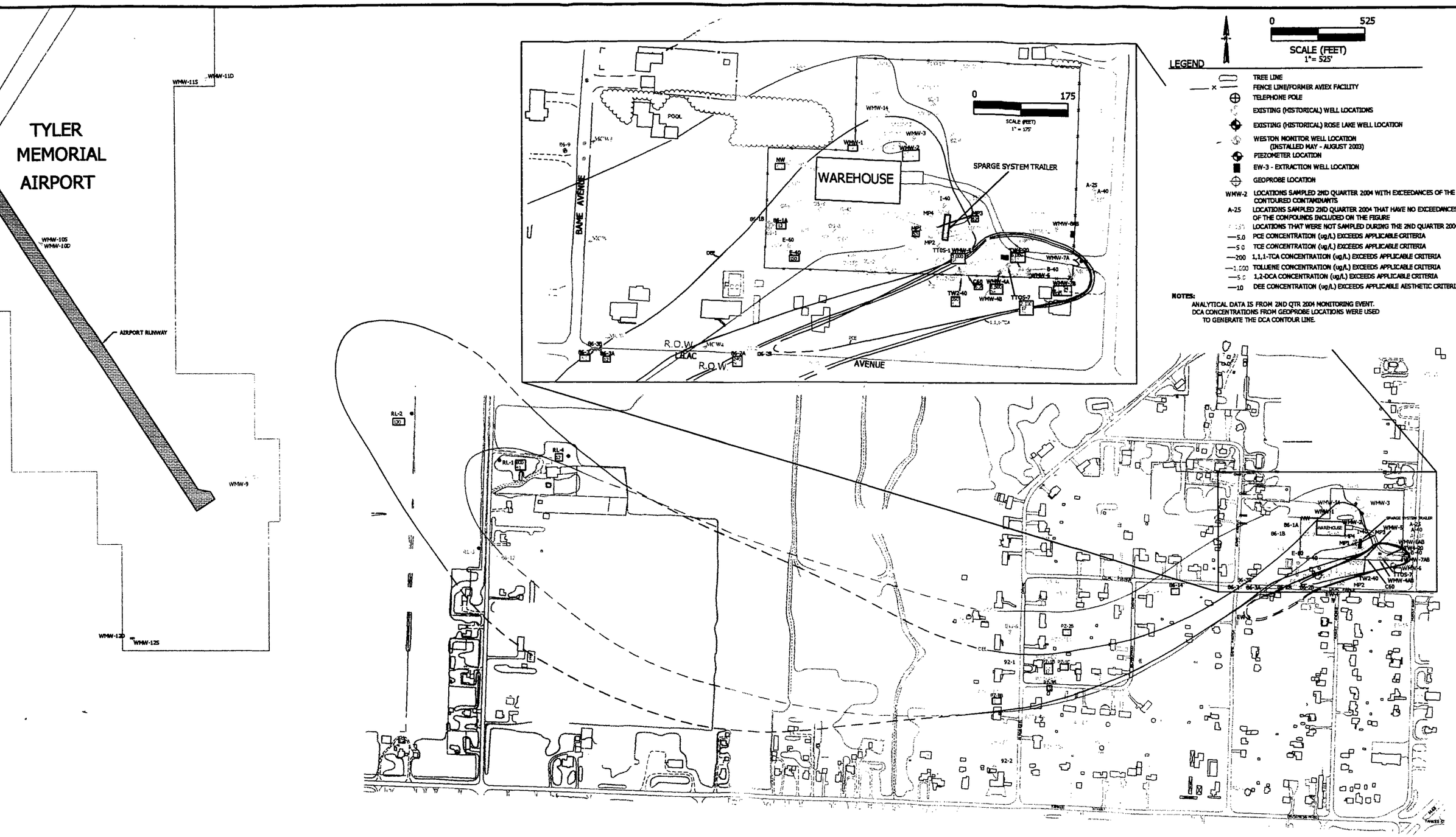

Figure 3: Concentration Map

TABLES

Table 1
Revised Criteria
US Aviex
Cass County, MI

	U.S. EPA Record of Decision Clean-up Goal (ug/L)	*MDEQ Part 201 Criteria (ug/L)1*	*MDEQ Part 201 Health-Based Criteria (ug/L)3*	*ROD Revised Clean-up Criteria (ug/L)4*
Contaminants Detected (ug/L)				
Benzene	5	5	5	5
sec-butyl Benzene	NI	80	80	NE
Carbon Disulfide	NI	800	800	NE
Chloroform	2	100	100	100
Chloroethane	NI	430	430	NE
1,2-Dichlorobenzene	NI	600	600	NE
Ethylbenzene	680	74 2	700 3	700
Isopropy Benzene	NI	800	800	NE
n-Propyl Benzene	NI	80	80	NE
1,2,4-Trimethylbenzene	NI	63 2	1,000 3	NE
1,3,5-Trimethylbenzene	NI	72 2	1,000 3	NE
Diethyl Ether	43	10 2	3,700 3	3,700
1,1-Dichloroethane (1,1-DCA)	NI	880	880	NE
1,2-Dichloroethane (1,2-DCA)	5	5	5	5
1,1,1-Trichloroethane (1,1,1-TCA)	200	200	200	200
1,1,2-Trichloroethane	NI	5	5	NE
1,1-Dichloroethene (1,1-DCE)	7	7	7	7
cis-1,2-Dichloroethene (1,2-DCE)	NI	70	70	70
trans-1,2-Dichloroethene (1,2-DCE)	700	100	100	100
Hexachloroethane	NI	7.3	7.3	NE
Dichlorodifluoromethane	NI	1,700	1,700	NE
2-Butanone (MEK)	NI	7.3	7.3	NE
2-Propanone (Acetone)	NI	1,700	1,700	NE
Tetrachloroethene	0.88	5	5	5
Trichloroethene	5	5	5	5
Trichlorofluoromethane	32,000	2,600	2,600	2,600
Methylene Chloride	NI	5	5	5
4-Methyl-2-Pentanone (MIBK)	NI	1,800	1,800	NE
Napthalene	NI	520	520	520
2-Methylnapthalene	NI	260	260	260
Tetrahydrofuran	NI	95	95	NE
Toluene	2,000	790 2	1,000 3	1,000
p-Isopropyl Toluene	NI	NL	NL	NI/NL
Vinyl Chloride	NI	2	2	2
Xylene (total)	440	280 2	10,000 3	10,000

Footnotes.

1 = Michigan Department of Environmental Quality (MDEQ) Administrative Rules for Part 201 Residential and Commercial I Drinking Water Criteria.
2 = Criteria listed are aesthetic drinking water values included in MDEQ Part 201 Criteria.
3 = Criteria listed are residential health-based drinking water values.
4 = As requested by MDEQ on 23 September 2003, revised clean-up criteria include updated health-based criteria for all constituents identified in the Record of Decision (ROD), and criteria for all constituents not included in the ROD that exceeded health-based drinking water values during February 2002 through July 2003 investigative sampling rounds.
NI = Not included in original ROD.
NL=Not listed in MDEQ Part 201 Criteria.
NE = Compound not included in original ROD and does not exceed health-based criteria, based on recent sampling.

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY
RECORD OF DECISION AMENDMENT
FORMER U.S. AVIEX SITE
NILES, MICHIGAN

I. Summary of Significant Comments Received and Responses

Comments received during the public comment period are presented within this summary. The comments are divided into the following sections; comments received at the public meeting, written comments from individuals, and written comments from organizations. The Michigan Department of Environmental Quality's (MDEQ) response is provided after the comments. The comments are paraphrased to effectively summarize them in this document. The complete original versions of the comments are contained in the Administrative Record that is located at Constitution Hall, 3rd Floor South, in Lansing Michigan. A copy is also available in the U.S. EPA Records Center, 77 West Jackson Boulevard, 7th Floor, Chicago, Illinois.

II. Comments received at the Public Meeting

Comment 1: *Mr. Kenneth Glatz of the United States Environmental Protection Agency (U.S. EPA) stated that he would like to clarify that the Record of Decision (ROD) Amendment selected remedy is not on-site enhancements, but instead it is monitored natural attenuation (MNA) with on-site enhancements. Mr. Glatz further indicated that MNA will be used to monitor the contaminant plume down gradient of the facility to demonstrate that the contaminant concentrations have decreased below applicable clean-up standards and that the plume is not increasing in size in a to be determined timeframe.*

MDEQ Response: The MDEQ has considered Mr. Glatz's comments and his concerns have been addressed in the ROD Amendment.

III. Written Comments from Individuals

No written comments were received by the MDEQ from individuals during the public comment period, which ended 9 September 2004.

IV. Written Comments from Organizations

No written comments were received by the MDEQ from organizations during the public comment period, which ended 9 September 2004.

ADMINISTRATIVE RECORD INDEX UPDATE #2

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR
U.S. AVIEX SITE
HOWARD TOWNSHIP, CASS COUNTY, MICHIGAN

UPDATE #2
SEPTEMBER 20, 2004

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	12/03/99	U.S. EPA	Public	Five Year Review Report for the U.S. Aviex Superfund Site	
2	03/00/04	Weston Solutions	MDEQ	Source Area Remediation Pilot Study Report for the U.S. Aviex Site	
3	05/00/04	Weston Solutions	MDEQ	Technical Memorandum for 4th Quarter 2003 Groundwater Monitoring at the Former U.S. Aviex Site	
4	05/00/04	Weston Solutions	MDEQ	Technical Memorandum for Vertical Aquifer Sampling at the Former U.S. Aviex Site	
5	05/00/04	Weston Solutions	MDEQ	Technical Memorandum for Well Head Protection Analysis at the Former U.S. Aviex Site	
6	07/00/04	MDEQ	Public	Proposed Record of Decision Amendment for the U.S. Aviex Site	
7	09/00/04	Weston Solutions	MDEQ	Technical Memorandum for 1st Quarter 2004 Groundwater Monitoring at the Former U.S. Aviex Site	